

# **Pre-Application Document**

**Proposed Mason Dam Hydropower Facility  
Baker County, Oregon  
FERC Project # P-120548**

**Prepared for Baker County  
1995 3<sup>rd</sup> Street  
Baker City, OR 97814**

**April 15, 2006**

**Prepared by Browne Consulting  
and Randy Joseph**

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## Mason Dam Project Location

Map created by Renaissance Engineering & Design, 2006  
Map 1



### Introduction

Baker County applied for a preliminary permit to generate hydroelectric power at Mason Dam, located in Baker County Oregon, with the Federal Energy Regulatory Commission (FERC) on June 19, 2001. That permit was issued by FERC on October 8, 2003.

From October 8, 2003 till the present Baker County has actively pursued the feasibility of the Mason Dam Hydro Electric Project. Initially, Baker County held hearings and informational meetings to make the community and affected agencies aware of the project and to build support within the populace. This has been effective and the County allocated \$10,000 in the 2005 budget for a professional economic feasibility study. In addition to the funds provided, Baker County has provided an equivalent or greater amount of resources in staff time and community volunteers.

CF Malm Engineers has completed the Draft Final Report Economic Review for the proposed Mason Dam Hydro Project, attached, with a recommendation to pursue the project. The area of greatest concern is the economic cost of interconnection to Idaho Power Company Incorporated (IPC) 138kv line. Baker County is in the process of working with IPC to determine the cost of an interconnection substation.

Renaissance Engineering and Design, at the request of Baker County, completed a site evaluation of Mason Dam, attached. The interconnection to Oregon Trail Electric Cooperative (OTEC) discussed in the site evaluation may require downsizing the system to 1-2 MW. Baker County would pursue this alternative if interconnection with IPC is not viable.

Baker County does not anticipate any engineering or environmental roadblocks to the project. All adjacent and interested parties have been contacted either by phone or through advertisement of meetings held over the past three years. No areas of concern have been brought forward.

Baker County will hold a public meeting for stakeholders and interested parties within 30 days of this mailing. This will be an informational meeting to discuss the licensing process with stakeholders and the public. Copies of the Pre Application Document and attachments will be available at the meeting and posted on Baker County's website ([www.bakercounty.org](http://www.bakercounty.org)).

Baker County looks forward to working with the Federal Energy Regulatory Commission in the licensing of the Mason Dam Hydro Electric Project.

## **Process Plan and Schedule**

The Mason Dam Hydropower project will be using the Integrated Licensing process. Responsibility for the steps below will be identified by either:

\* *BC = Baker County*

\* *FERC = Federal Energy Regulatory Commission*

\* *Public = General Public as pertaining to comment periods*

### I. Preparation Phase (60 days)

1. Collect Available Data, Identify Potential Issues (BC)
2. File NOI and PAD (BC)
3. Commission Reviews NOI and PAD (FERC)

### II. Scoping Phase (60 days)

1. Scoping Document 1 is Issued (FERC)
2. Scoping Meetings and Site Visit (FERC)
3. Issues discussed, Information Gaps Identified (FERC, BC)
4. Comments on PAD and Study Requests are Issued (FERC)

### III. Study Planning Phase (215 – 285 days)

1. Construct Proposed Study Plan (based on identified data gaps, including requests identified in previous phase) (BC)
2. File Proposed Study Plan (BC)
3. Meetings for Study Plan (BC)
4. Period for Comment on the Study Plan (Public)
5. File Revised Study Plan (BC)
6. Study Plan Determination Made (FERC)

### IV. Study Phase (90+ days)

1. Conduct Study from Approved Study Plan (BC)
2. File Report for Study (BC)
3. Review Plan Based on Study Findings (FERC, BC)
4. Make Necessary Revisions (BC)

### V. Filing for Licensing Phase (314+ days)

1. File Preliminary Licensing Proposal (no later than 150 days before application) (BC)
2. Comments Received on Licensing Proposal (FERC), Make Edits (BC)
3. License Application Filed (BC)
4. Tendering Notice Issued (FERC)
5. Notice of Acceptance Issued (FERC)

### VI. Assessment Phase (360 – 450+ days)

1. Notice Issued of Ready for Environmental Analysis (FERC)
2. Period of Comments and Interventions (Public)
3. Commission issues Environmental Analysis (EA) (FERC)
4. Comments on EA are Received (Public)
5. Final EA or EIS are issued (FERC)

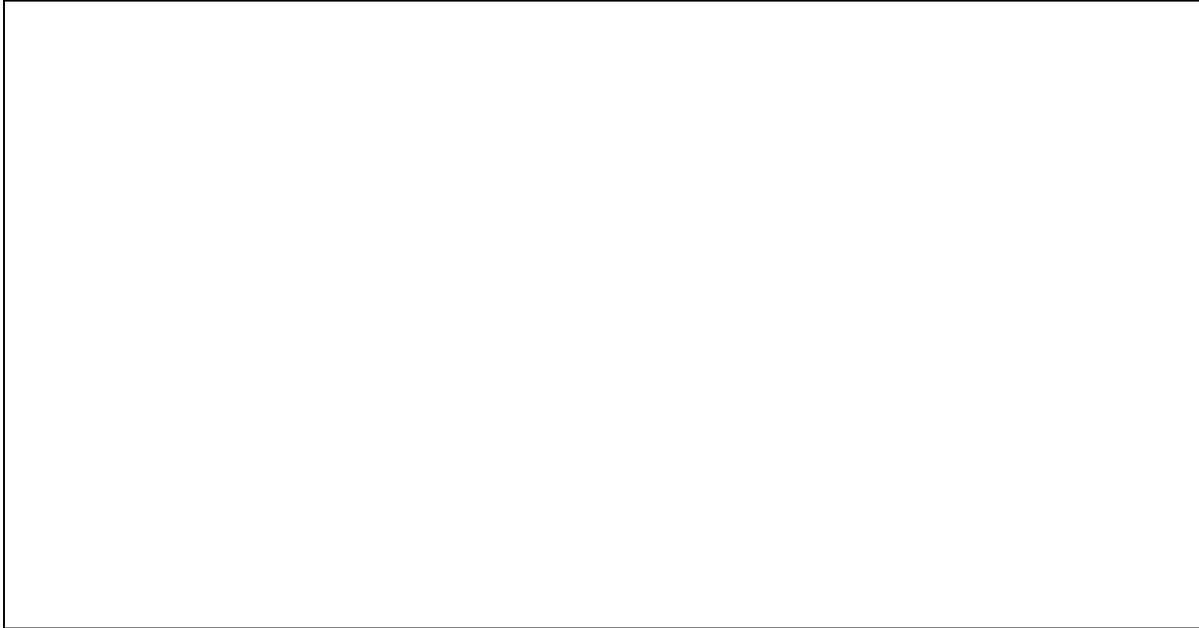
6. License Order is Issued (FERC)
- VII. Engineering and Construction Phase
  1. Design (365 days) (BC)
  2. Construction (365 days) (BC)

**Project Location, Facilities, and Operations/Detailed Maps of Lands, Waters**

Legal Description: Approximation- 44 degrees 40.370' N, 118 degrees 00.009'W. Elevation: 4,180'.

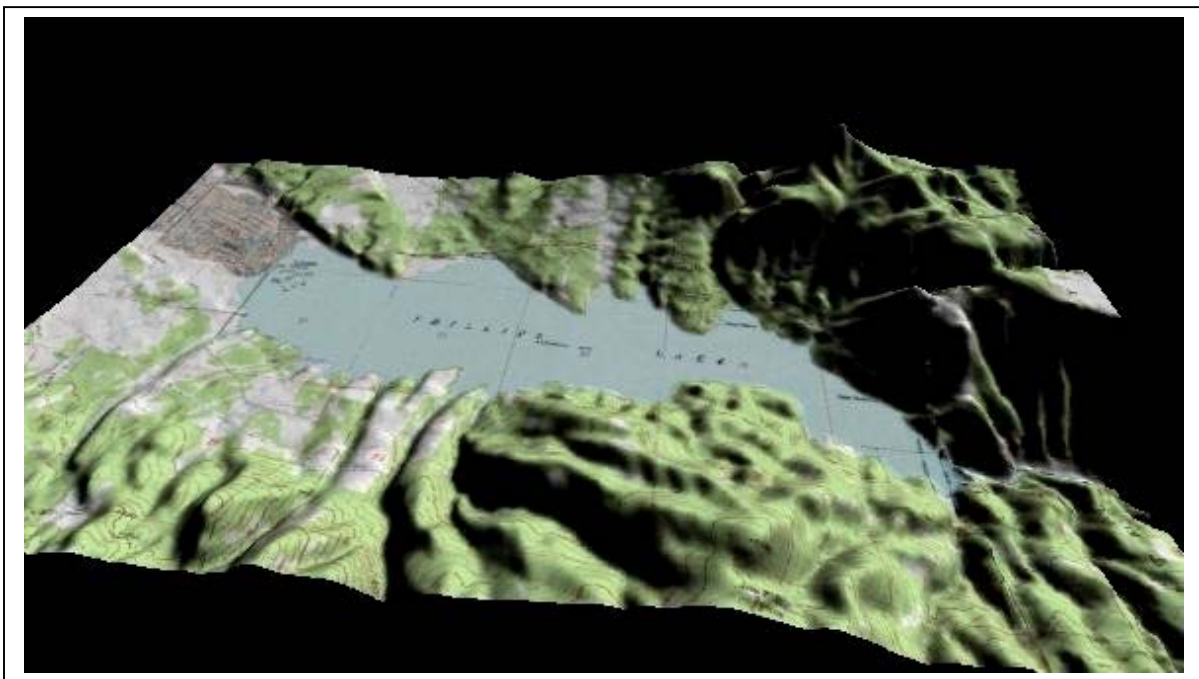
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Verbal Description: Mason Dam is located 17 miles from Baker City by way of Hwy 7 (11 aerial miles). (9)

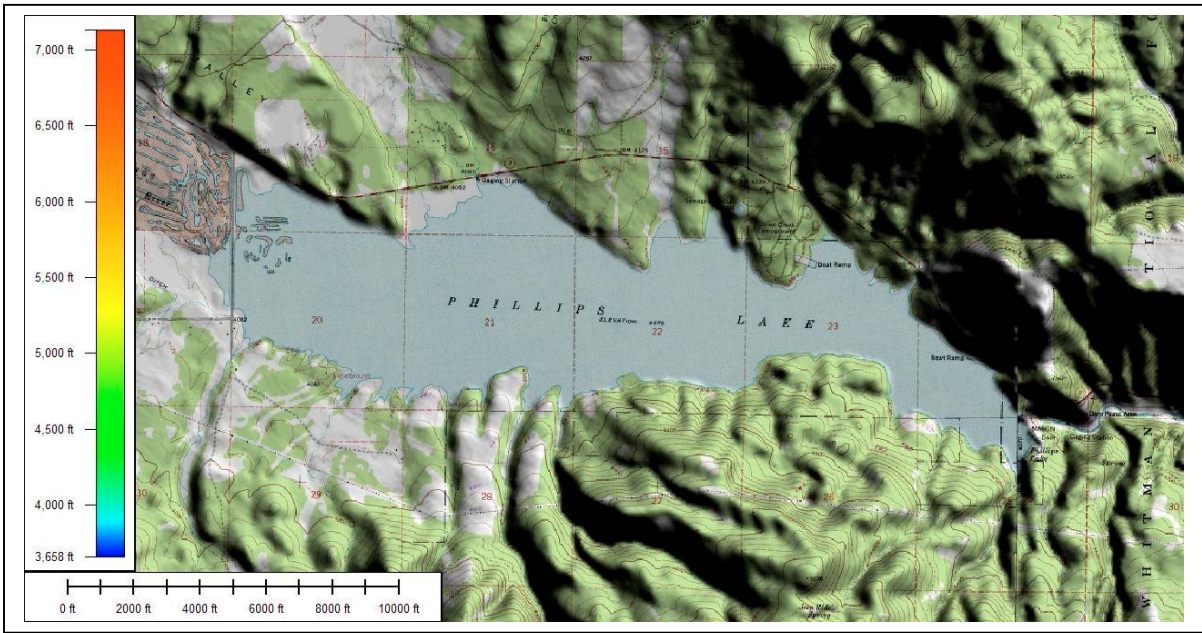


Above: **Map 2-** Map of Phillips Reservoir in Relation to Baker City

Below: **Map 3-** Mason Dam/ Phillips Reservoir 3 Dimensional Map (maps created by Browne Consulting)

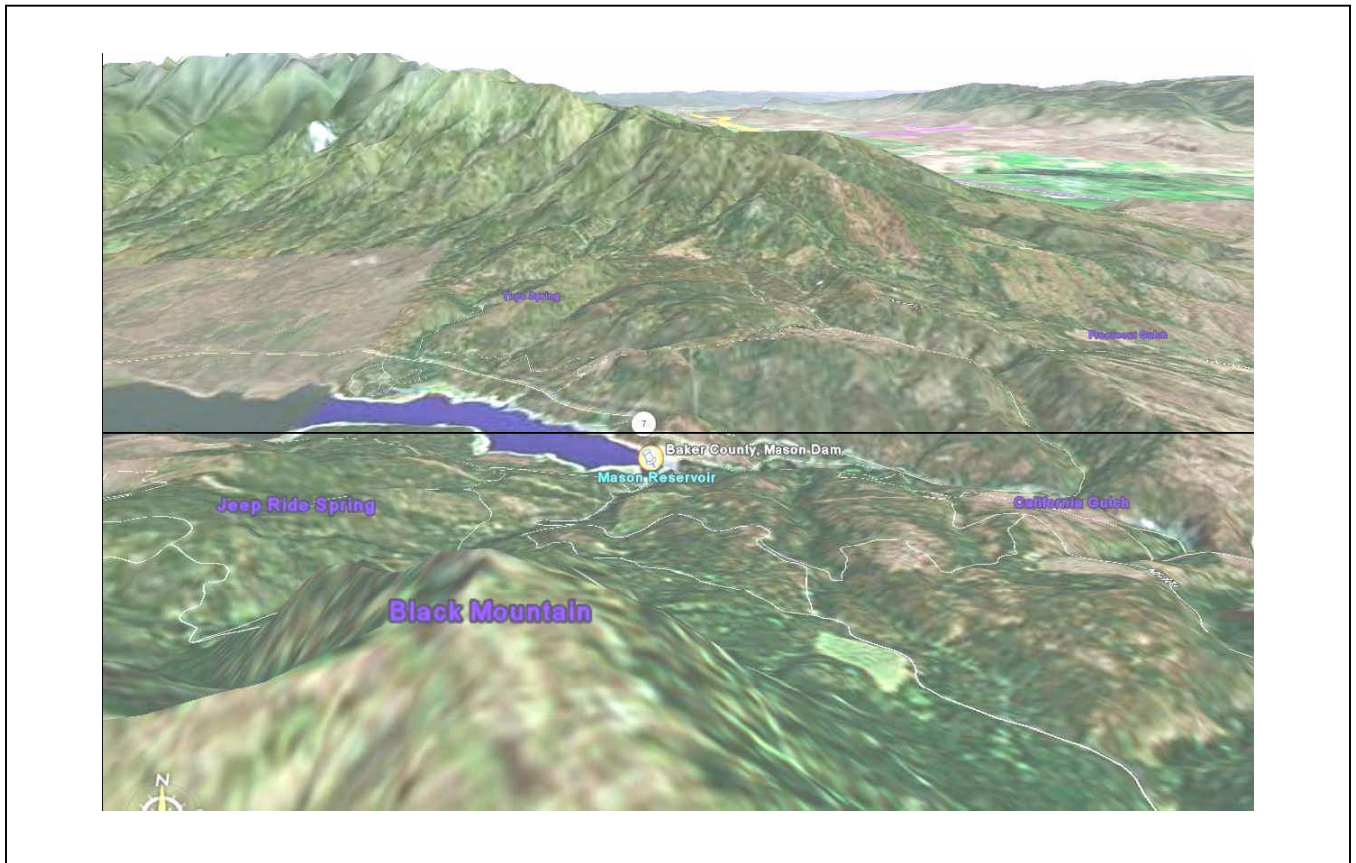






Above: **Map 4-** Mason Dam/ Phillips Reservoir Quad Map (map created by Browne Consulting)

Below: **Map 5-** Side-aerial view of Mason Dam/ Phillips Reservoir and surrounding topography (map created by Renaissance Engineering & Design, 2006)



## Description of Existing Project Area and Facilities

Mason Dam is part of the Baker Project, which resulted in the construction of Thief Valley Dam as the 'Lower Division', and Mason Dam as the 'Upper Division'. The Upper Division facilities consist of the major features of Mason Dam, Phillips Reservoir, and recreation facilities. Phillips Reservoir is surrounded by U.S. Forest Service property, so recreation facilities are operated by the Wallowa-Whitman National Forest. (1)

Mason Dam is a rolled earth and rock-fill dam that is 175 feet high and has a crest length of 895 feet. Congress approved construction of Mason Dam in 1962 for the authorized purposes of irrigation, flood control, conservation of fish and wildlife, and recreation. Construction of the dam began in 1965 and was finished in 1968. Mason Dam is owned by the Bureau of Reclamation, and operated by the Baker Valley Irrigation District. (1)

Phillips Reservoir behind the Mason Dam covers 2,235 acres, with a total capacity for 95,500 acre-feet. Active capacity of the reservoir is 90,500 acre-feet. 38,000 acre-feet of that capacity function as flood control, with 17,000 acre-feet of that designated exclusively for flood control. Irrigation uses of the water produce crops primarily of grain, alfalfa hay, pasture, and some seed. There are 2,235 acres of water surface and almost 13 miles of shoreline. (1)

Photo 1: Mason Dam, Black Mountain Road



There are 5,038 acres in the area of Phillips Reservoir available for recreation. There are established recreation facilities for camping, picnicking, swimming, as well as boat launching and a mooring base. Fishing is a popular pursuit on the reservoir, as several species of trout are annually stocked there. (1)

### General Description of Dam

Mason Dam contains approximately 895,000 cubic yards of embankment. The crest of the dam, elevation 4,082, is 35 feet wide 895



feet long, and approximately 167 feet above the bed of the Powder River. The dam is a zoned earthfill embankment having a relatively impervious core, Zone 1, flanked by a Zone 2 of sand, gravel, and cobble dredger tailings. A Zone 3, rockfill, is placed at the upstream and downstream toes of the dam. Riprap protects the upstream slope and Zone 4, a cobble and bolder blanket, protect the down stream face.

### Existing Facilities

In addition to the dam existing facilities consist of the spillway and outlet works. The spillway is of the ungated overfall crest type with a 20 foot crest length. The crest is at elevation 4,070.50, the top of the flood control pool. The inlet and crest structure and the 20 foot wide stilling basin are joined by a chute. The inlet and crest structure is spanned by a bridge designed for H20-S16-44 loading. An access bridge spans the stilling basin.

Photo 2: Mason Dam Existing Spillway, Control House and Spillway



The outlet works consist of a tower-type trash-racked intake structure, a 6 foot 6 inch diameter circular tunnel; a gate chamber housing a 4 foot by 4 foot high-pressure emergency gate; an 8 foot 9 inch modified horseshoe tunnel housing a 56 inch inside- diameter steel pipe; a control structure housing two 2 foot 9 inch by 2 foot 9 inch high-pressure regulating gates; and a stilling basin. An access bridge crosses the upstream end of the chute and stilling basin. A 12 inch bypass pipe extends from the gate chamber through the downstream tunnel and the control structure and terminates in a stilling well adjacent to the spillway stilling basin. (11)

### Proposed Facilities

3 MW Hydropower Plant for state of the art fully automatic operation is proposed. Estimated annual production is 8.3 GWh. According to the economic review for the proposed hydropower facility, performed by CF Malm Engineers, Baker County should not anticipate any engineering challenges, just a straightforward design, as well as no environmental issues. Because the hydropower facility can be built with water stored and released for irrigation just as it is now, run-of-the-river, the project would be transparent to the irrigators with no additional environmental

impact. (6) Presently, there are no hydroelectric generating facilities in the Powder River subbasin. (10)

The proposed facilities would include a turbine-generator with a 43 inch runner diameter and a maximum rated flow of 270cfs and a minimum flow of 30 cfs; a synchronous 3000 kw generator at 4023 hp, 4160 volts and 300 amps; inlet and outlet piping and valves; switching gear, transformers, relays and additional equipment to operate the facility; housed in a 40 foot by 50 ft power house.

Proposed interconnection is to Idaho Power Company Incorporated 138kv line 1 mile south of the proposed powerhouse, with the construction of a substation adjacent to Black Mountain Road and the 138kv line. Direct burial in conduit of a 34.5kv under ground distribution cable will connect the powerhouse to the substation. The proposed route for the buried cable will be in the existing Black Mountain Road right-of-way.

Project Operations:

Baker Valley Irrigation District  
Jim Colton  
3895 10<sup>th</sup> Street  
Baker City, OR 97814  
(541) 523-5451

Agent: County Commission Chair  
Fred Warner, Jr.  
1995 3<sup>rd</sup> Street  
Baker City, OR 97814

Additional Agent:  
Randy Joseph  
37123 Hanson Lane  
Baker City, OR 97814  
(541) 894-2347

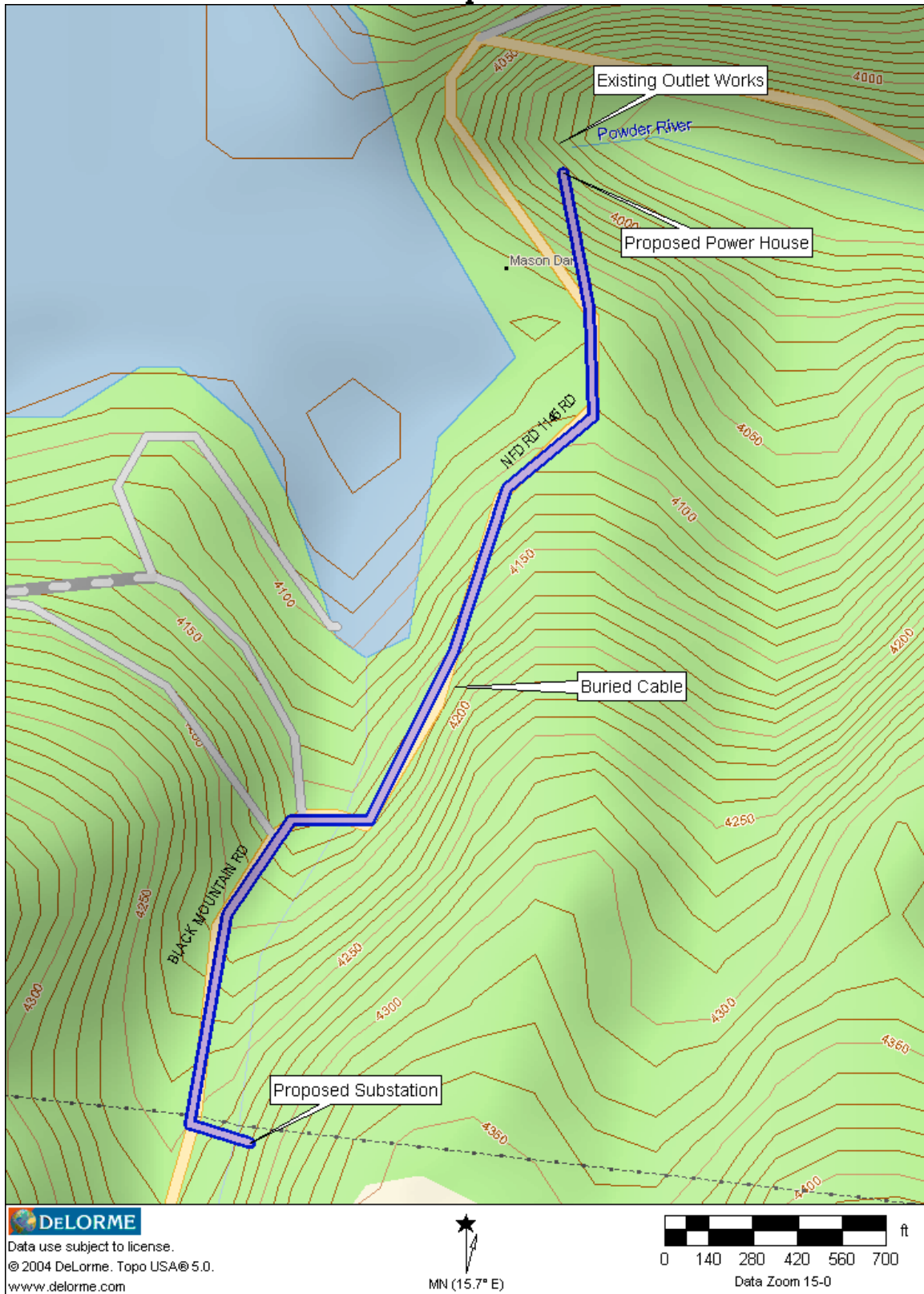
Photo 3: Idaho Power 138kv line, Black Mountain Road, Site of Proposed Substation



Photo 4: Black Mountain Road looking north under IPC 138 kv line



# Proposed Interconnection for Hydropower Facility Map 6



## **Description of Existing Environment and Impacts for:**

### Geology and Soils Resources

#### *Historic Geology*

The Upper Powder Watershed, which includes Mason Dam and Phillips Reservoir, was shaped by the docking of an island arc on the edge of an earlier continent, leaving masses of metavolcanic and metasedimentary rock approximately 250 million years ago. These were the beginnings of the Elkhorn Mountains, which have been exposed to several million years of weathering. 120 million years ago, granitic Bald Mountain batholith was intruded below, and although this did not immediately alter the shape of the landscape, it did result in gold deposits that would later have an influence on the landscape. From 12 – 40 million years ago, a variety of volcanic deposits were laid on the south side of the watershed. Basalts and andesitic tuffs were the last major addition to the present parent material. The Mount Mazama eruption nearly 6,700 years ago also left a significant deposit of silty volcanic ash. The Elkhorn Mountains were uplifted by block-faulting, which exposed argillites and granitic rocks to water and eventually ice erosion. These are considered the contemporary land sculpting forces. A basin in the southern portion of the watershed formed because of a drop-down block, filling with water first, then silty and clayey lakebed sediments. The Powder River found an exit from the basin where Mason Dam is currently located, and gravelly alluvial deposits were laid down on top of old lakebed sediments. (3)

Geologically, the watershed is considered very stable. Aerial photos have not shown any mass failure activities in the watershed. The highest, coldest landscapes are dominated by the processes of glacial and periglacial activity. In the warm, dry portions of the basin, stream deposition is the dominant geological process. The intermediate elevations are dominated by water erosion. (3)

#### *Soils*

The area directly around Mason Dam is not mapped on the Baker County Soil Survey. There are two dominant soil types around Phillips Reservoir above Mason Dam: Sumpley-Stovepipe and Typic Xerorthents. Sumpley-Stovepipe silt loams soils are characterized by 0–3% slopes and occurrence on flood plains. The native vegetation is mainly water tolerant grasses, rushes, and sedges. Typic Xerorthents soils are cobbly and characterized by 2-12% slopes. The soils are created in areas of mine-tailings left from gold dredging activities. The closest mapped soils to Mason Dam are the Highhorn-Huntrock and the Hankins. Highhorn-Huntrock is a very gravelly silt loam, characterized by 12-30% on south



slopes. Native vegetation is mainly conifers, shrubs, and grasses. The soil is deep and well drained. Hankins soil is a very cobbly loam characterized by 12-35% north slopes. This is a deep, well-drained soil where permeability is slow, runoff is medium, and the hazard of water erosion is moderate or high. (2)

### Water Resources

Phillips Reservoir has a storage capacity of 95,500 acre-feet, and an active storage capacity of 90,500 acre-feet of water. Additionally, there is a minimum pool of 5,000 acre-feet below the outlet. Flood control is one of the major concerns in the area during spring snowmelt, so 38,000 acre feet are designated for that purpose. Of that, 17,000 acre-feet are designated exclusively for flood control and must be released when not needed, and the remaining 21,000 acre-feet for flood control are shared with irrigation. (1) Phillips Reservoir is the largest reservoir in the Powder Subbasin, and the maximum water storage occurred in 1983 with 86,337 acre-feet stored. (10)

The Baker Valley Irrigation District has an agreement with the Oregon Department of Fish and Wildlife to release enough water to meet a 10 cfs (cubic feet per second) minimum instream flow at Smith Dam, which is about 5 miles below Mason Dam. The irrigation season officially begins on March 1 and ends November 1, but in practice the season usually runs between April 15 and October 1. Primary irrigated crops are grain, alfalfa hay, pasture, and some grass seed. (3) The Upper Division provides supplemental water for some 19,000 acres, which includes some contiguous areas previously dry-farmed near the city of Baker. (1)

“The headwaters of the Powder River are in the Blue and Wallowa mountains at elevations between 6,000 and 9,000 feet. The timing and amount of spring runoff is dependent on winter snowpack depth and condition as well as spring weather factors such as temperature and rainfall.” (10) The drainage area above Mason Dam is about 168 square miles, and the annual discharge averages 74,385 acre-feet. (10)

### Fish and Aquatic Resources

The Oregon Department of Fish and Wildlife has established ‘Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources’, which covers each major waterway in the state. According to this document, the Powder River from the mouth to Phillips Reservoir is designated for work between July 1 and October 31 due to Rainbow Trout. The document also designates all areas above Phillips Reservoir for work between July 1 and August 31 due to the presence of Bull

Trout. (7) Fingerling trout and catchable trout are stocked annually. Reproduction is somewhat limited by yellow perch. (8)

“The Powder River subbasin holds 4 distinct populations of redband trout. These occupy the Powder River from the mouth to Thief Valley Dam, Eagle Creek, The Powder River from Thief Valley Dam to Mason Dam and the Powder River above Mason Dam (ODFW 1997).” (10)

There is no known historic documentation of bull trout in the Powder subbasin prior to the 1960’s; historic distribution of bull trout in the Powder is unknown. It is suspected that they were widespread in the upper Powder drainages and seasonally connected to the Snake River. Passage above RM 70 on the Powder River was blocked in 1932 by construction of Thief Valley Dam, which has no upstream passage. Mason Dam, constructed in 1968, isolated bull trout in the upper Powder River from bull trout in the North Powder River and other Powder valley tributaries. (10)

### Wildlife and Botanical Resources

Phillips Reservoir is a popular bird watching site because of the wide variety of birds that make use of the area. It’s an important area for raptors, waterfowl, and shorebirds (both nesting and migrants) (3). Many waterfowl rest at the Reservoir during migration, especially Canada geese. (4) Phillips Reservoir is also an important habitat area for Bald Eagles. (3) The area around Phillips Lake is also an identified spotted frog breeding site. (3)

The Upper Powder River is an important habitat area for Rocky Mountain elk and mule deer. Both species are at target population levels according to Oregon Department of Fish and Wildlife. (3)

### Wetlands, Riparian, and Littoral Habitat

#### *Wetlands*

“ Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and normally do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, shallow swamps, lakeshores, peatlands, wet meadows, and riparian areas. There are two general settings for wetlands in the watershed. Wetlands located along streams and lakeshores are referred to as “lotic” or “riparian” wetlands. Marshes, swamps, peatlands, and wet meadows are referred to as “lentic” wetlands. Most wetlands in the watershed are stream-associated riparian wetlands.



The dredge tailings above Phillips Reservoir provide habitat for waterfowl and other aquatic fauna. Although the series of ponds may not be officially classified as “wetlands”, personnel with NRCS and ODFW who are responsible for evaluating wetlands concur that the tailings are functioning as such. The tailings account for over 1,400 acres of which one-fourth to one-third has been estimated to hold surface water and riparian vegetation.” (3)

#### *Riparian Areas*

“The most common riparian hardwoods are red osier dogwood, thin leaf alder, mountain alder, willow species and current. Meadow environments tend to be small in size (less than one acre) and randomly distributed within riparian areas. The largest meadows are located adjacent to Phillips Reservoir...” (3)

#### Rare, Threatened and Endangered Species

The Powder River Basin is home to one fish and two wildlife species that are of high concern; two of these are considered ‘Threatened’ in accordance with the Endangered Species Act, and one is being considered for listing with the Endangered Species Act. In addition, the Powder River Basin was historically home to two species that are federally listed under the Endangered Species Act as Threatened, but the population status is currently unknown for this area.

Bull Trout, *Salvelinus confluentus*, are listed with the federal Endangered Species Act as Threatened, and in Oregon, under the Threatened and Endangered Species List, they are considered sensitive-critical. (10) Although there are Bull Trout identified in some tributaries of the Powder River, there are no Bull Trout present in the Powder River or in Phillips Reservoir. (3)

The Columbia spotted frog, *Rana luteiventris*, is being considered a candidate species for listing under the Endangered Species Act, and in Oregon, it is listed as sensitive-unclear status. The area around Phillips Reservoir has been identified as Columbia spotted frog breeding habitat. (10)

The bald eagle, *Haliaeetus leucocephalus*, is federally listed under the Endangered Species Act as Threatened, and in Oregon under the Threatened and Endangered Species List as Threatened. (10)

Two species are listed as Threatened with the federal Endangered Species Act that were historically found in the Powder Basin, but were extirpated from the area. The gray wolf and the Canada lynx are considered

threatened, but their population status in the Powder Basin is currently unknown. (10)

The Powder Basin once supported healthy runs of anadromous fish, but all anadromous fish species have been extirpated from the area due to land changes, including the installation of a series of dams on the Snake River. Currently, the Powder River Basin is not part of any ESU. (10)

The Powder River subbasin is also home two one fish species and twenty-three wildlife species that are designated as species of concern with the U.S. Fish and Wildlife Service and NOAA Fisheries. The fish species of concern is the Red-banded trout, *Oncorhynchus mykiss*, which is federally considered a Species of Concern, and in Oregon is considered Sensitive-vulnerable. Red-banded trout are present in Phillips Reservoir.

The twenty-three wildlife species are listed on figure 1, followed by a chart (figure 2) detailing the plant species of concern for the Powder River subbasin.

**Federally Designated Wildlife Species of Concern potentially in the Powder River Subbasin. Table 1**

A \* denotes species extirpated from the area or whose population status is unknown. Table from Powder River Subbasin Plan (10)

<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>Oregon Status</b>
Tailed frog	<i>Ascaphus truei</i>	Species of Concern	Sensitive-Vulnerable
northern sagebrush lizard	<i>Sceloporus graciosus</i>	Species of Concern	Sensitive-Vulnerable
northern goshawk	<i>Accipiter gentilis</i>	Species of Concern	Sensitive Critical
western burrowing owl	<i>Athene cunicularia</i>	Species of Concern	Sensitive Critical
ferruginous hawk	<i>Buteo regalis</i>	Species of Concern	Sensitive Critical
western greater sage-grouse	<i>Centrocercus urophasianus</i>	Species of Concern	Sensitive-Vulnerable
yellow-billed cuckoo	<i>Coccyzus americanus</i>	Species of Concern	Sensitive Critical
eastern Oregon willow flycatcher	<i>Empidonax trailii</i>	Species of Concern	Sensitive-Unclear Status
Lewis's woodpecker	<i>Melanerpes lewis</i>	Species of Concern	Sensitive Critical
mountain quail	<i>Oreortyx pictus</i>	Species of Concern	Sensitive-Unclear Status

white-headed woodpecker	<i>Picoides albolarvatus</i>	Species of Concern	Sensitive Critical
Columbian sharp-tailed grouse*	<i>Tympanuchus phasianellus</i>	Species of Concern	None
pygmy rabbit*	<i>Brachylagus idahoensis</i>	Species of Concern	Sensitive-Vulnerable
Pale western big-eared bat	<i>Corynorhinus townsendii</i>	Species of Concern	Sensitive Critical
California wolverine*	<i>Gulo gulo</i>	Species of Concern	Listed Threatened
silver-haired bat	<i>Lasionycteris noctivagans</i>	Species of Concern	Sensitive-Unclear Status
Pacific fisher*	<i>Martes pennanti</i>	Species of Concern	Sensitive Critical
Long-eared myotis	<i>Myotis evotis</i>	Species of Concern	Sensitive-Unclear Status
western small-footed myotis	<i>Myotis ciliolabrum</i>	Species of Concern	Sensitive-Unclear Status
fringed myotis	<i>Myotis thysanodes</i>	Species of Concern	Sensitive-Vulnerable
Long-legged myotis	<i>Myotis volans</i>	Species of Concern	Sensitive-Unclear Status
Yuma myotis	<i>Myotis yumanensis</i>	Species of Concern	None
Preble's shrew	<i>Sorex preblei</i>	Species of Concern	None

**State and Federal Special Status Plant Species in the Powder River Subbasin**

**Table 2**

*Table from Powder River Subbasin Plan (10)*

<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Documented Locations (drainages)</b>
Upward-lobed moonwort	<i>Botrychium ascendens</i>	Species of Concern	Candidate Species	Powder, Upper John Day
crenulate moonwort	<i>Botrychium crenulatum</i>	Species of Concern	Candidate Species	
skinny moonwort	<i>Botrychium lineare</i>	Species of Concern	None	
Twin-spike moonwort	<i>Botrychium paradoxium</i>	Species of Concern	Candidate Species	Powder, Upper John Day, NF John

				Day
Clustered lady's-slipper	<i>Cypripedium fasciculatum</i>	Species of Concern	Candidate Species	
Red-fruited lomatium	<i>Lomatium erythrcarpum</i>	Species of Concern	Listed Endangered	Powder
Oregon semaphoregrass	<i>Pleuropogon oregonus</i>	Species of Concern	Listed Threatened	Powder
Snake River goldenweed	<i>Pyrrcoma radiata</i>	Species of Concern	Listed Endangered	
Howell's spectacular thelypody	<i>Thelypodium howellii</i>	Listed Threatened	Listed Endangered	Powder

### Recreation and Land Use

There are a total of 5,038 acres in the Phillips Lake area that are available for recreational use. The water surface is 2,235 acres, which contributes to nearly 13 miles of shoreline. (1) Recreational pursuits in the area include water sports, boating, camping, fishing, hunting, picnicking, wildlife viewing, and hiking. During the winter, cross-country skiing trails are also available. (4,5)

Angling is a popular pursuit on Phillips Reservoir, which is stocked annually with a variety of fish species. Species found in the Reservoir include largemouth bass, smallmouth bass, rainbow trout, black crappie, yellow perch, and coho salmon. (4) Ice fishing is also popular. (8)

Recreation sites are available at Mason Dam Picnic Site and at Union Creek. Mason Dam Picnic site is 16 miles SW of Baker, and has 8 picnic sites available for no fee. The user level is low, and special activities available are fishing. Union Creek provides opportunities for campers 20 miles SW of Baker, and has 80+ picnic sites, 12 tent sites, and 58 tent/travel trailer sites for a fee. The user level is high, and special activities include fishing, hiking, boating, swimming, and water skiing. Additionally, there is a barrier-free trail and fishing platform along 0.5 mile section of the river. The Wallowa-Whitman National Forest operates both sites. (5)

The areas around Powder River and tributaries were historically used for mineral mining, and in some areas mining still continues. Mining activity took place in two concentrated efforts between 1915 and 1954. The channel dredging of the river associated with historic mining practices implemented significant changes to the channel morphology of the Powder River, as tailings were left in the riparian zones. Above Phillips Reservoir, 1,400 acres of tailings can be found. (10) Currently, mining is

still a significant land use in the Baker County, as there are more patented mine claims than in all other Oregon counties combined. Additionally, there are many unpatented mineral claims. (10)

No statistics on land use are available for the area immediate to Mason Dam or Phillips Reservoir. However, a Basin-wide assessment says, “Approximately two-thirds of the Powder Basin is rangeland with livestock grazing as the primary land use. One-sixth of the Basin is forestland where timber harvest and summer livestock grazing are the main uses. Most of the remaining area is cropland and pastureland irrigated by gravity flood or sprinkler systems. Irrigated acres produce primarily grain, hay and pasture.” (10)

### Aesthetic Resources

Views include Elkhorn Mountains, riparian meadows, pine forests. (5) Since the dam is already in place, aesthetic resources will largely be unaffected. Please refer to pictures to see the effect that the proposed changes accompanying a hydropower facility would create.

### Cultural Resources

Early Euro-American settlers came with the Oregon Trail, which passed through Baker County, and settlement spread to the upper reaches of the watershed with the discovery of gold in the 1860’s. Mineral mining has historically been important to Baker County. (10)

### Socioeconomic Resources

#### *Livestock*

Grazing is an important land use in the Powder Basin, involving important economic and multigenerational traditions. The economic and cultural base of the Powder subbasin relies heavily on livestock production. (10)

#### *Farming and Grazing*

The wide variety of irrigated croplands and pasturelands produced within the Powder Basin enhances both local and statewide economies while supporting multigenerational cultural tradition. Fires in shrub-steppe habitats have economic impacts by reducing short-term forage resources and, through weed invasion, reducing long-term forage. Altered fire regimes are negatively impacting shrub-steppe habitats and associated species. Noxious weeds invade habitats after fire and other disturbances. Their intrusion impacts agriculture, water quality, recreationalists, ranchers, and other people, and native terrestrial and aquatic species and habitat. (10)

### *Recreation*

Currently hunting, fishing and other wildlife viewing related recreation is a billion dollar industry in the state of Oregon.

Since this hydropower project will be transparent to irrigators, the effect on socioeconomic resources will be minimal.

### Tribal Resources

Long before pioneers and settlers arrived in the area, the Cayuse, Umatilla and Nez Perce Indians utilized hunting and fishing grounds along the length of the Powder River. (10)

### River Basin Description

#### *Basin Description*

The Northwest Power and Conservation Council gives this general description of the Powder Basin in their Powder River Subbasin Plan, "The subbasin is defined by the Blue Mountains to the west, the Snake River to the east, the Wallowa Mountains and Grande Ronde subbasin to the north and the Burnt River subbasin to the south...The Powder River flows 144 miles from its source in the Blue Mountains to join the Snake River at river mile (RM) 296 about 11 miles downstream of Richland, Oregon. The Powder River begins near Sumpter, Oregon (RM 144), where the McCully Fork, Cracker Creek and several smaller tributaries join, and flows east-southeast through the tailings of past dredge mining and into Phillips Lake (RM 136). The river exits Phillips Lake at RM 131, continuing east for about 7 miles before turning north through the Bowen Valley and Baker City, Oregon (RM 113). From here the river meanders the floor of the Baker Valley and passes by the cities of Haines (RM 98) and North Powder (RM 82) where it is joined by the North Powder River. The Powder River again turns southeast (RM 78), flows through Thief Valley Reservoir (RM 71), through the Lower Powder Valley and enters the Snake River System through the Powder Arm of Brownlee Reservoir (RM 10) near Richland, Oregon. Eleven dams on the Columbia and Snake rivers separate the Powder River from the Pacific Ocean. Most surface and ground water use is for irrigation." (10)

#### *Stream Channel*

Stream Gradient and Channel Type: the Powder River was a low gradient C-type channel that has been thoroughly disturbed by dredge mining and is currently confined by tailings to mostly B-type or F-type channels. In this watershed more than one-third of the length of the main Powder River valley is covered by Phillips Reservoir. (3)

### **Preliminary Issues List**

1. Interconnection with Idaho Power or OTEC
2. Turbines: oxygenation and design. The potential for fish mortality is low due to the fact that there are no migratory species in the Powder River. However, the effects on fish populations will need consideration.
3. Potential effect on Threatened, Endangered, and Sensitive Species

Photo 5: Control House, Spillway and Site of Proposed Power House





## Studies List

Renaissance Engineering & Design. Mason Dam Hydro Generation Site Evaluation. March 22, 2006. Presented to Baker County Commissioners.

C F Malm Engineers, Seattle, Washington. Proposed Mason Dam Hydro. Economic Review. October 6, 2005. Interim Report presented to Baker County Commissioners.

Upper Powder River Watershed Assessment. Prepared for the Powder Basin Watershed Council, Baker City, Oregon. September 2001.

M. Cathy Nowak, Cat Tracks Wildlife Consulting. Powder River Subbasin Plan. May 28, 2004. Prepared for the Northwest Power and Conservation Council.

## Summary of Contacts

<b>Name</b>	<b>Address</b>	<b>Phone</b>
Randy Joseph	37123 Hanson Lane Baker City, OR 97814	(541) 894-2347
Vicki Wares	3990 Midway Drive Baker City, OR 97814	(541) 523-7121 ext. 119
Done Claire	3990 Midway Drive Baker City, OR 97814	(541) 523-7121 ext. 100
Elaine Korman	Wallowa-Whitman National Forest 1550 Dewey Ave. Baker City, OR 97814	(541) 523-6391
Bob Mason	Wallowa-Whitman National Forest 1550 Dewey Ave. Baker City, OR 97814	(541) 523-6391
Suzanne Fouty	Wallowa-Whitman National Forest 1550 Dewey Ave. Baker City, OR 97814	(541) 523-6391
Jeff Zakel	Oregon Department of Fish and Wildlife 107 20 <sup>th</sup> Street La Grande, OR 97850	(541) 963-2138
Jeff Colton	Baker Valley Irrigation District 3895 10 <sup>th</sup> Street Baker City, OR 97814	(541) 523-5451



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10. M. Cathy Nowak, Cat Tracks Wildlife Consulting. Powder River Subbasin Plan. May 28, 2004. Prepared for the Northwest Power and Conservation Council.
11. United States Department of the Interior. Bureau of Reclamation. Designers' Operating Criteria Mason Dam Upper Division Baker Project Oregon. March 1971. Office of Design and Construction Denver, Colorado.